What is claimed is:

1. A fluid diffusion layer suitable for use in a fuel cell electrode, said fluid diffusion layer comprising a porous carbonaceous web impregnated with a carbonization product of at least one polymer having pyrrolidone functionality.

2. The fluid diffusion layer of claim 1 wherein said carbonization product is carbonized polyvinylpyrrolidone.

3. The fluid diffusion layer of claim 1 wherein said fluid diffusion layer is a gas diffusion layer.

4. An electrode suitable for use in a solid polymer electrolyte fuel cell, said electrode comprising the fluid diffusion layer of claim 1 and a catalyst.

5. The fluid diffusion layer of claim 1 wherein said porous carbonaceous web is a non-woven carbon fiber mat comprising carbon fibers and a binder.

6. The fluid diffusion layer of claim 5 wherein said binder is a polymer having pyrrolidone functionality.

7. The fluid diffusion layer of claim 1 wherein said fluid diffusion layer is greater than about 50% porous.

8. The fluid diffusion layer of claim 1 additionally comprising carbon particles impregnated within said web.

9. The fluid diffusion layer of claim 8 wherein said carbon particles comprise graphite.

10. The fluid diffusion layer of claim 1 wherein said fluid diffusion layer has a Taber stiffness greater than 2 Taber units.

11. The fluid diffusion layer of claim 1 wherein said fluid diffusion layer has an electrical conductivity greater than about 1 $(ohm\text{-}cm)^{-1}$.

12. The fluid diffusion layer of claim 1 wherein said fluid diffusion layer has a Gurley air permeability of less than about 20 seconds.

13. A fluid diffusion layer for use in a fuel cell electrode, the fluid diffusion layer comprising a plurality of porous carbonaceous webs impregnated with and bound together by a carbonization product of a polymer having pyrrolidone functionality.

14. The fluid diffusion layer of claim 13 wherein the carbonization product is uniformly distributed through the plurality of webs.

15. The fluid diffusion layer of claim 13 wherein the carbonization product is mostly uniformly distributed throughout the plurality of webs.

16. The fluid diffusion layer of claim 13 wherein the plurality of webs form one or more interfaces between adjacent webs, and the carbonization product is mostly disposed at the interfaces.

17. The fluid diffusion layer of claim 13 wherein the plurality of webs comprises a first web and a second web, and the first web comprises a different material than the second web.

18. The fluid diffusion layer of claim 13 wherein the plurality of webs comprises a first web and a second web, and the first web has a different structure than the second web.

19. The fluid diffusion layer of claim 1 wherein the fluid diffusion layer further comprising a non-particulate carbon filler bound to the porous carbonaceous web by the carbonization product.

20. The fluid diffusion layer of claim 19 wherein the non-particulate carbon filler comprises chopped carbon fibers.

21. A fluid diffusion layer for use in a fuel cell electrode, the fluid diffusion layer comprising at least one porous carbonaceous web impregnated with a carbonization product of at least one polymer having pyrrolidone functionality, and the fluid diffusion layer defines at least one fluid distribution channel.

22. The fluid diffusion layer of claim 21 wherein the fluid diffusion layer comprises a plurality of porous carbonaceous webs impregnated with and bound together by the carbonization product.

23. The fluid diffusion layer of claim 21 additionally comprising non-particulate carbon filler bound to the web by the carbonization product.

24. The fluid diffusion layer of claim 23 wherein the non-particulate carbon filler comprises chopped carbon fibers.